

REMARKS

Claims 1, 3, 5-8, 10, 11, 13, 14, 16, 18-21, and 23-27 are pending in the application. Claims 1, 5, 8, 10, 14, 16, 18, 19, 21, 23, 24 and 26 have been amended. The amendments are supported by the specification at least on page 7, lines 21-22 (e.g., a description of a filter) and on page 12, lines 7-22 and in Figure 4 (e.g., a description of hardware components of the claimed apparatus). No new matter has been introduced. Reconsideration and allowance of the claims in view of the above amendments and the remarks that follow are respectfully requested.

Objections

Claim 1 is objected to because of the semi-colon on line 5. Claim 1 has been amended to replace the semi-colon with a colon. Claim 5 is objected to because it depends on a cancelled claim. Claim 5 has been amended to correct dependency. Applicants respectfully submit that the amendments obviate the grounds for the objections. Withdrawal of the objections to claims 1 and 5 is respectfully requested.

Claims Rejections under 35 U.S.C. §101

Claims 14 and 21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Specifically, the Examiner alleges that the apparatus claimed in claims 14 and 21 can be implemented in a purely software implementation. Claims 10 and 14 have been amended to recite a processor and a memory. Claims 16, 18, 19, 23, 24 and 26 have also been amended accordingly. Applicants respectfully submit that the amendments obviate the grounds of the rejection. Withdrawal of the rejection to claims 14 and 21 under 35 U.S.C. §101 is respectfully requested.

Claims Rejections under 35 U.S.C. §102

Claims 1, 3, 5-7, 14, 16, 18-20 rejected under 35 U.S.C. 102(e) as being anticipated by Liao (U.S. Patent No. 7,188,168). Applicants respectfully traverse the rejection.

To anticipate a claim, each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); see also MPEP

§ 2131. Moreover, the “identical invention must be shown in as complete detail as is contained in the ... claim.” Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claim 1, as amended, is directed to a method for routing packets in a network in conjunction with a quality of service guarantee, comprising: receiving a packet having a header section and a payload section; inspecting the payload section of the packet in a network core as a prelude to routing the packet, the step of inspecting, comprising: extracting data attributes from the payload section, comparing the extracted data attributes to two or more attributes filters, and if the comparing step indicates that each of the two or more attributes filters is satisfied, performing a set of functions; determining a quality of service guarantee for the packet; and selectively routing the packet based upon the inspecting and the quality of service guarantee, wherein each attributes filter describes a set of events that a subscriber is interested in receiving from publishers.

Independent claim 14, as amended, is directed to an apparatus for routing packets in a network in conjunction with a quality of service guarantee, comprising a processor and a memory, said processor comprising: means for receiving a packet having a header section and a payload section; means for inspecting the payload section of the packet in a network core, an inspection comprising: extracting data attributes from the payload section, comparing the extracted data attributes to two or more attributes filters, and if the comparing step indicates that each of the two or more attributes filters is satisfied, determining how to route the packet; means for determining a quality of service guarantee for the packet; and means selectively routing the packet based upon the inspection results obtained from and the quality-of-service guarantees determined by the inspecting and quality of service modules above, wherein each attributes filter describes a set of events that a subscriber is interested in receiving from publishers.

Liao generally describes a routing device that specifies protocol hierarchies among data packets using a packet classification language. Liao fails to teach or suggest “comparing the extracted data attributes to two or more attributes filters, and if the comparing step indicates that each of the two or more attributes filters is satisfied, performing a set of functions,” as recited in claims 1 and 14 of the instant application.

The Examiner alleges that Liao discloses the comparing step in column 19, lines 5-25. The relevant paragraph reads:

FIG. 9 shows another embodiment in which the parser hardware of the invention is used in the traffic manager component of an ATM switch. Two parsers are configured in a back-to-back arrangement to handle bi-directional traffic. A first parser 902 processes input traffic to provide information for queuing decision making based on first queuing rules 903. A policy index, namely the token id or token group id, matched by the parser is used to look up a decision table 906 that defines how packets should be mapped into queues. The queuing decisions are passed along with the packets to a downstream queuing engine and switch fabric 900. A second parser 904 analyzes the out-going traffic. The normal data traffic is passed to the output port. The flow control messages are identified by parser 904 based on a second set of rules 905 and translated to decision table updates. In this architecture, the input parser 902 makes the queuing decisions, the queuing engine 900 generates flow control messages according to the status of the queues, and the output parser 904 identifies the flow control messages and updates the decision table 906. This arrangement provides a tight feed-back loop that can run at wire speed. The flow control information is passed to the input decision engine mixing with outgoing traffic. The queuing rules are defined as the program to the input parser, and the flow control rules are defined as the program to the output parser. This double parser architecture provides a flexible mechanism to construct an adaptive queuing decision engine with flow control capability in which both queuing rules and flow control rules are user programmable.

Although not elaborated in the Office Action, the Examiner seems to suggest that the double parser architecture described above read upon the "two or more attributes filters" of the instant invention. Applicants respectfully disagree.

The instant invention extracts data attributes from the payload section of a data packet, and compares the extracted data attributes to two or more attributes filters, wherein each attributes filter describes a set of events that a subscriber is interested in receiving from publishers. The instant specification provides that:

Each subscription encapsulates a subject filter and an attribute filter. Routers can possibly expand a subject filter to the set of matching subjects and merge attribute filters on a per-subject basis. An intelligent router evaluates the subject filter against the subject of notifications, and evaluates the attribute filter against the attribute values in notifications. The syntax for subject filters can possibly use wildcards, and the syntax for attribute filters can use Boolean expressions, both of which are further explained below. The term "filter" is used to describe a set of events that a subscriber is interested in receiving from publishers. Routing rules are generated from the filters and are used by intelligent routers to make routing decisions (page 7, lines 16-21).

It is therefore clear to a person of ordinary skill in the art that the comparing step in the instant invention refers to comparing the extracted data to two or more sets of events that a subscriber is interested in receiving from publishers.

In contrast, the “parsers” of Liao are not “sets of events that a subscriber is interested in receiving from publishers.” Although it may be argued that the input parser 902, which processes input traffic and makes the queuing decisions, may inherently possess a set of events that a subscriber is interested in receiving from publishers, the output parser 904 does not have this feature. Accordingly to Liao, the second parser 904 analyzes the out-going traffic. The normal data traffic is passed to the output port. The flow control messages are identified by parser 904 based on a second set of rules 905 and translated to decision table updates. Therefore, the output parser 904 screens out-going traffic for the flow control messages, which are not data extracted from the original packet but data generated by the queuing engine 900. To accomplish this task, the output parser 904 does not need to compare the “extracted data” to anything, let alone a filter that describes a set of events that a subscriber is interested in receiving from publishers.

Accordingly, applicants respectfully submit that the cited passage of Liao does not disclose the step of “comparing the extracted data attributes to two or more attributes filters, and if the comparing step indicates that each of the two or more attributes filters is satisfied, performing a set of functions.” For this reason alone, claims 1 and 14 are patentable over Liao.

Moreover, Liao fails to teach or suggest the steps of “determining a quality of service guarantee for the packet; and selectively routing the packet based upon the inspecting and the quality of service guarantee,” as recited in instant claims 1 and 14.

The Examiner alleges that Liao discloses these steps in column 2, lines 33-38 and column 14, lines 40-43. Applicants respectfully disagree.

As described in the specification of the instant application on pages 40-41, the “determining” and “selective routing” steps of the instant invention are designed to guarantee priority of services. For example, data packets generated for premium customers are routed to the link with the highest bandwidth (highest priority) to guarantee a particular QoS for those customers. Data packets that are bandwidth sensitive can also be route to higher priority links.

On the contrary, Liao simply mentions in column 2, lines 33-38, that “to provide quality of service (QoS) and fine grain traffic management, future networking applications require packet classifiers capable of handling large numbers of customized policies” (column 2, lines 33-38). Liao does not teach or suggest “determining a quality of service guarantee for the packet; and selectively routing the packet based upon the inspecting and the quality of service guarantee,” as recited in claims 1 and 14.

Column 14, lines 40-43 of Liao provides that “the packet is then handled according to the detected token identifiers and group identifiers during subsequent processing by the routing device; e.g. firewall filtering, policy-based routing, and so on.” This passage refers to the scanning of lexical tokens in a packet by a parser and subsequent processing of the packet by the routing device. It does not teach or suggest “selectively routing the packet based upon the inspecting and the quality of service guarantee.”

Accordingly, Applicants respectfully submit that Liao does not anticipate claims 1 and 14 because it fails to teach or suggest each and every claim limitation. Applicants further submit that claims 3, 5-7, 16, and 18-20 are patentable over Liao because they depend from one of claims 1 and 14 and recite additional patentable subject matter. Withdrawal of the rejection to claims 1, 3, 5-7, 14, 16, and 18-20 under 35 U.S.C. 102 is respectfully requested.

Claims Rejections under 35 U.S.C. §103

Claims 8, 10, 11, 13, 21, 23, 24, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liao (U.S. Patent No. 7,188,168) in view of Banavar et al (U.S. Patent No. 7,050,432). Applicants respectfully traverse the rejection.

To establish a *prima facie* case of obviousness ... the prior art reference (or references when combined) must teach or suggest all of the claim limitations. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991) and *MPEP* § 2142.

As discussed above, Liao does not teach or suggest the step of comparing data attributes to two or more filters, wherein each filter describes a set of events that a subscriber is interested in receiving from publishers. Moreover, Liao fails to teach or suggest the step of determining a quality of service guarantee for a packet or message. Therefore, independent claims 8 and 21 are patentable over Liao.

Banavar generally describes a technique for reliably multicasting a message within a router network. Banavar is cited for its teachings on subscription based services. Banavar does not cure the deficiency of Liao because it also fails to teach or suggest the steps of comparing data attributes to two or more filters, wherein each filter describes a set of events that a subscriber is interested in receiving from publishers, and determining a quality of service guarantee for a packet or message.


Accordingly, Applicants respectfully submit that Liao and Banavar, individually or in combination, do not render claims 8 and 21 obvious because they do not teach or suggest all of the claim limitations. Applicants further submit that claims 10, 11, 13, 23, 24, 26 and 27 are patentable over Liao and Banavar because they depend from one of claims 8 and 21 and recite additional patentable subject matter. Withdrawal of the rejection to claims 8, 10, 11, 13, 21, 23, 24, 26 and 27 under 35 U.S.C. 103 is respectfully requested.

CONCLUSION

In view of the above remarks, Applicants respectfully assert that the application is in condition for allowance. Prompt examination and allowance of the claims is respectfully requested. Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Michael Ye, Reg. No.: 47,195
Andrews Kurth LLP
1350 I Street, NW
Suite 1100
Washington, DC 20005
Tel. (202) 662-3008
Fax (202) 662-2739